

AFNI Jazzercise Answers

Below are the solutions to the AFNI Jazzercise questions.

1.

```
3dbucket -prefix rall_slim \
    func_rall+orig'[0, 4, 5, 13..18]'
```
2.

```
3dMean -prefix anat_mean anat1+orig anat2+orig anat3+orig
```
3.

```
3dIntracranial -anat anat+orig -prefix anat_3dIntra
3dSkullStrip -input anat+orig -prefix anat_3dSkull
```
4.

```
3dWinsor -nrep 5 -prefix anat_winsor anat+orig
```
5.

```
3dZcutup -keep 40 90 -prefix anat_40_90 anat+orig
```
6. Making and Playing with ROI Masks:
 - a.

```
3dcalc -a 'func_slim+orig[2]' -b 'func_slim+orig[4]' \
    -expr 'ispositive(a-50) * ispositive(b-50)' \
    -prefix ex_AT_mask
```
 - b.

```
3dcalc -a 'func_slim+orig[2]' -b 'func_slim+orig[4]' \
    -expr 'ispositive(a-50) + 2 *ispositive(b-50)' \
    -prefix ex_AT_mask_4
```
 - c. Use the “**Pos?**” toggle button (in the AFNI GUI→Define OverLay) for positive-only intensities, and set the “*******” (number of colors) to 4. Red, orange and yellow are values 1, 2, and 3, respectively.
 - d.

```
3dROIstats -mask ex_AT_mask+orig -quiet epi_r1+orig \
    > ex_AT_mean.1D
```
7. Fun with 1D files:
 - a.

```
count 1 10 > row1.1D
count 11 20 > row2.1D
count 21 30 > row3.1D

1dtranspose row1.1D > col1.1D
1dtranspose row2.1D > col2.1D
1dtranspose row3.1D > col3.1D

1dcat col1.1D col2.1D col3.1D > 3cols.1D
```
 - b.

```
1dcat col1.1D col2.1D col3.1D \
    col3.1D col2.1D col1.1D > 6cols.1D
```
 - c.

```
1deval -a '6cols.1D[0]' -b '6cols.1D[1]' \
    -c '6cols.1D[2]' -d '6cols.1D[3]' \
    -e '6cols.1D[4]' -f '6cols.1D[5]' \
    -expr '(a+b+c+d+e+f)/6' > ex_mean.1D
```

8. Fun with the afni GUI:
 - a. Right-click the gray-scale bar of any viewing plane (e.g., sagittal) and select the **Choose Display Mode Range**. Type in the numbers **50 150**.
 - b. Go to Define OverLay in the afni GUI. For both OLay and Thr select sub-brick #0 (Full F-stat). To display only positive overlay values, click on the “**Pos?**” button. To show only 4 panels in the color bar, select the “**#4**” button. Now place your cursor on the color panel that is colored orange. If you leave your cursor there for a moment, the numbers 226.21-339.32 will appear. This means that F-values that fall within this range will appear in the OverLay dataset as orange. To change the color from orange to lime green, left-click on the orange panel and a hidden pop-up menu will appear that allows you to change the color.
 - c. The easiest way to save a jpeg file is to right-click on the **Sav1.ppm** button in the sagittal viewer. This will open a hidden menu that allows you to save the image as a ppm, jpg, gif, tif, etc. Select the **jpg** button. This will change the Sav1.ppm to a **Sav1.jpg** button. Click on that and type in the prefix name **cool_slide** and save it.
 - d. Right click in one of the viewing planes (e.g., sagittal), which will open a hidden menu. Select the **Talairach To** button and select the right uncus option.
 - e. Go to the sagittal viewer and click on the **Mont** (Montage) button at the bottom of the viewer. This will open the Montage controller. Select **5** slices Across, **1** slice Down and **Set**.
 - f. The Mission Statement is hidden in the empty space in the bottom left-hand corner of the afni GUI. Right-click in this empty space to gain access to the Mission Statement and other AFNI tidbits.
9. Doing calculations in AFNI:
 - a. `3dinfo func_slim+orig`
 - b. `ccalc '22.3 * 44.5'`
10. Image Filtering:
 - a. `3dmerge -1blur_fwhm 8 -doall -prefix ex_blur8 epi_r1+orig`
 - b. `3dLocalstat -nbhd 'RECT(0,0,-3)' -stat min \
-prefix ex_minz3 anat+orig`
 - c. `3danisosmooth -viewer -prefix ex_anisotest ex_minz3+orig`
`3danisosmooth -prefix ex_aniso -iters 3 ex_minz3+orig`

11. Random Exercises with AFNI Datasets:

- a. 3dinfo anat+orig
3daxialize -prefix exRAI -orient RAI anat+orig
3dresample -prefix exRAI -orient rai -inset anat+orig
- b. 3dbucket -prefix ex_toolcoeff func_slim+orig'[3]'
3dbucket -prefix ex_toolfstat func_slim+orig'[4]'
- c. 3dbucket -prefix ex_tool \
ex_toolcoeff+orig ex_toolfstat+orig
- d. adwarp -apar anat+tlrc -dpar func_slim+orig \
-prefix func_slim4mm -dxyz 4
- e. 3dmaxima -input func_slim+orig'[0]' |& head 10
whereami -34 -46.88 -1.88 -rai